

The foregoing Amendment is fully supported by the specification and original claims and neither presents nor includes new matter; the Amendment presents no issues not previously considered by the Examiner and does not require additional searching.

Claim 60 is like claim 21, amended; the definition of the mercaptoloweralkanol ester is supported on pages 8-13 of the specification.

Claims 61 and 62 find support in original claims 8 and 9.

Claims 63 and 64 find support in original claims 18 and 19.

Claim 65 finds support in original claim 20.

Claim 66 finds support in original claims 20 and 21.

Claim 67 finds support in claim 22, amended.

Claims 68 and 69 find support in claims 47 and 48.

Claims 70 and 71 find support in claims 18 and 19.

Since the claims are fully supported by the specification and original claims, are within the purview of the issues previously considered and the search previously conducted by the Examiner, it is respectfully submitted that the claims are entitled to entry.

It is respectfully submitted that the Examiner is engaging in a hindsight reconstruction of the invention in

light of Applicants' specification and claims. Applicants urge that the references are mutually inconsistent and that the teachings of each of them must be modified to arrive at the claimed invention. Further, there is no indication in any of the references why such modification should be made or what direction to take when making such modification.

The Stapfer et. al. reference is directed to the use of organic divalent sulfur compounds as stabilizers for polyvinyl chloride. At page 22, in the last paragraph, Stapfer et. al. state:

"In the past, a number of organic compounds containing divalent sulfur have been contemplated as stabilizers against thermal decomposition of PVC (6 and 7). Most of these compounds, such as thiol sulfides, disulfides, polysulfides, thioacetals, and, lately, thiolanhydrides, exhibit fair long-term dynamic stabilizing efficacy both for plasticized and rigid PVS formulations, even though they can hardly be considered as effective hydrogen chloride acceptors. Yet they have never gained commercial importance because substantial discoloration of the polymer occurs during processing."

At the bottom of the first column on page 23, Stapfer et. al. go on to indicate how to solve the problem that they are confronting.

"Actually, the disadvantages of organic divalent sulfur compounds can be overcome by the inclusion of small amounts of monohydrocarbyltin compounds with organic thio compounds (8 and 9).Among the more effective species are the mercaptoles and mercaptals of mercaptopropionic acid esters, long-chain alkyl thiolanhydrides and disulfides, as well as certain acyl mercaptoles."

Stapfer et. al. clearly indicate their conclusion, stating at the first column on page 26:

"Proprietary mercaptoles or thioanhydrides in combination with small amounts of monoalkyltin synergists are seen out-performing calcium-zinc systems and approaching the effectiveness of organotin stabilizers."

It is thus seen that the entire thrust of Stapfer et. al. is to overcome short-term discoloration when using a mercaptole, mercaptal, thioanhydride or acyl mercaptole as the primary stabilizer. Stapfer et. al. indicate that the preferred combination is thiollauric anhydride in conjunction with a monoalkyltin compound.

It should be emphasized that Stapfer et. al. are attempting to approach the same level of effectiveness as is achieved by conventional organotin stabilizers by the use of what is in fact a totally different system. Applicants, on the other hand, are attempting to maintain the level of effectiveness of organotin stabilizers. Thus, the fundamental underlying concept, the total rationale of Stapfer et. al. is different from the invention contemplated by Applicants. Further, the mercaptoles, mercaptals, thioanhydrides or acyl mercaptoles of Stapfer et. al. are totally different from the mercaptoloweralkanol esters contemplated by Applicants. Thiollauric anhydride does not suggest an ester such as 2-mercaptoethyl tallate.

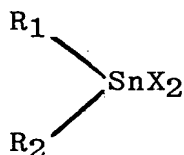
Not only does the Stapfer et. al. reference not point the direction toward Applicants' claimed invention, but there is a significant difference in performance between Stapfer et. al.'s. preferred compound, thiollauric anhydride and the mercaptoesters embraced by the claims. Thus, in

the accompanying Affidavit of M. Foure under 37 CFR 1.132, it is seen in Experiment 1 that thiollauric anhydride degrades performance, and in the other Experiments that thiollauric anhydride remains consistently significantly poorer in performance with a variety of tin stabilizers than the mercaptoesters described in the claims.

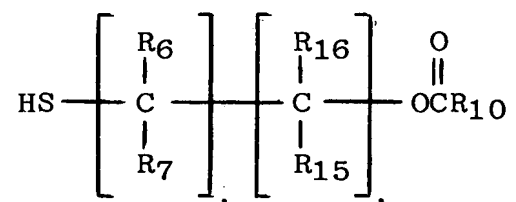
Weinberg et. al. teach the stabilization of polyvinyl chloride compositions using a dialkyltin sulfide. Weinberg et. al. neither teach nor suggest the combination of tin stabilizers with a mercaptoloweralkanol ester of a dicarboxylic acid containing 2 to 20 carbon atoms. Further, to the extent that the combination of the Stapfer et. al. and Weinberg references is attempted, it is urged that the references are inconsistent because Stapfer is specific for monoalkyltin compounds while Weinberg et. al. disclose only dialkyltin compounds.

Kugele teaches that the compositions described and claimed by Applicants do not work. Thus, Kugele takes an ester such as mercaptoethyl caprylate (See column 1, lines 12-15) and reacts it with a tin compound. This is seen at column 5, lines 49 et. seq. where Kugele teaches:

"Thus, there can be reacted 1 mol of a compound of the formula:



with 1 mole of a compound having the formula:



followed by neutralization with an alkali or alkaline earth metal hydroxide in an amount equal to the mercaptoalkanol ester of the carboxylic acid followed by reaction with ammonium or an alkali or alkaline earth metal sulfide."

At column 6, line 57 et. seq. Kugele sets forth illustrative mercapto esters which can be used for reaction with the tin compound.

It is respectfully submitted that one consulting the Kugele reference, reading that the reaction product of a mercaptoalkanol ester with a tin compound is required to obtain useful stabilization would not conclude that the individual components would provide an acceptable result. It is respectfully urged that the teaching by Kugele of the utility of a reaction product is a clear teaching away from the utility of the individual components.

Kugele et. al. clearly teach that it is not the combination of the mercaptoester with a tin compound that is the active composition but, rather, that it is their reaction product that is the useful stabilizer. The reference is totally silent respecting the use of the unreacted components. In order to arrive at Applicants'

claimed invention, one must depart from the clear teaching of Kugele et. al. when there is no basis apart from Applicants' specification and claims for making such departure.

The Gough et. al. reference is directed to a synergistic stabilizer composition comprising an organotin borate and an organic thiol compound. In order to arrive at Applicants' claimed invention, the Examiner must ignore Gough's organotin borate in the first instance and; in the second instance, must pick and choose from among the various organic thiols those that fall within the scope of Applicants' claims. It is respectfully submitted that there is no basis from Gough et. al. or from the other references of record whereby to make the necessary modification or selection. Departure from the organotin borate destroys the synergy at which Gough's invention is directed. Further, Gough teaches that a variety of organic thiols are equivalent in his context. Applicants have demonstrated that this equivalence does not hold in their context. This proposition is reinforced by the accompanying Affidavit of M. Foure under 37 CFR 1.132. It is seen that there is significant variability in performance among the preferred Gough et. al. thio compounds -- none of which incidentally happens to be a mercaptoester within the scope of those described in Applicants' claims. Further, the claimed mercaptoesters display consistently significantly superior performance when compared to the thiol compounds of Gough. Specifically, from Tables I, II and III, at columns 13 and 14 of Gough et. al., one would conclude that isooctylthioglycolate, the thiol compound of Gough et. al. Examples 7-20 is a preferred material. The data in Examples 3, 4 and 5 of the M. Foure Affidavit clearly show that the mercapto esters defined by Applicants' claims significantly outperform isooctylthioglycolate; the claimed mercapto esters also significantly

outperform the other thiol compounds exemplified by Gough et. al. The Examiner has not indicated why the selection of Applicants mercaptoloweralkanol ester would be suggested by the totality of the Gough teaching; it is respectfully submitted that it is only Applicants' specification and claims that provides a basis for modifying the teaching of Gough.

Finally, Applicants again urge that the Examiner consider the significance of Brecker et. al. alone, and in conjunction with the teaching of Kugele. As Applicants have previously urged, Brecker et. al., at column 6, lines 34-45, clearly and unambiguously teach that a synergistic effect is not noted in the combination of mercapto carboxylic acid esters with organotin compounds such as dibutyltin bis-(isooctyl thioglycolate) and other organotin mercaptocarboxylic acid esters.

Brecker et. al. looked for the effect which the Examiner states is obvious and could not find it. This teaching of Brecker et. al. is reinforced by the teaching of Kugele. Kugele teaches that in order to get desired stabilization one must react a mercapto ester with a tin compound. The clear teaching of Kugele and Brecker is that one does not obtain satisfactory stabilization from a mercaptocarboxylic acid ester and an organotin compound. The most specific teachings cited by the Examiner, uncontradicted by the art of record, lead directly away from what Applicants are claiming.

As indicated, the Examiner will find enclosed herewith an Affidavit of M. Foure under 37 CFR 1.132 wherein various thio compounds taught in the Gough and Stapfer references are compared with various compounds falling within the scope of the present application.

It is seen that the claimed compositions are consistently substantially superior to the prior art. These consistently superior results could not be predicted from a consideration of the prior art. In addition, in Experiment 6 there is evaluated an organotin borate as taught by Gough. The results are abysmal. One desirous of maintaining the performance of existing state-of-the-art organotin stabilizers would not turn to an organotin borate for useful performance.

It is clear that when the prior art is considered without reference to Applicants' specification and claims, not only does the prior art not suggest the claimed invention but the prior art specifically teaches away from Applicants' invention. Further, from the additional data provided in the Affidavit under 37 CFR 1.132 it is seen that the results obtained by the claimed invention are consistently substantially superior to the results obtained from what the Examiner has indicated to be the most closely related prior art.

From the foregoing, it is respectfully submitted that Applicants' claims are directed to a new and unobvious method to which unexpected results are attributable. Accordingly, it is submitted that Applicants' claims clearly satisfy the requisites for patentable invention and that this case is in condition for allowance. Entry of the Amendment, reconsideration of the application and allowance thereof are earnestly solicited.

Respectfully submitted,

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Date

By

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